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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,109

04/28/2005

Ken Hirano

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38834 7590 05/31/2007

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP  
1250 CONNECTICUT AVENUE, NW  
SUITE 700  
WASHINGTON, DC 20036

EXAMINER

MATTHEWS, TERRELL HOWARD

ART UNIT

PAPER NUMBER

3654

MAIL DATE

DELIVERY MODE

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/533,109

**Applicant(s)**

HIRANO ET AL.

**Examiner**

Terrell H. Matthews

**Art Unit**

3654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### **FINAL REJECTION**

Applicant's arguments filed 5/3/2007 have been fully considered but they are not persuasive for reasons as detailed below.

The prior art rejection are maintained or modified as follows:

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7,14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (US-5495105) in view of Martin (US-4887721) in further view of Mitsuhiro (JP-4370089).

Referring to claims 1-7,14-15. Nishimura discloses a "Method and Apparatus For Particle Manipulation and Measuring Apparatus Utilizing The Same". See Figs 1-16c and respective portions of the specification. Nishimura further discloses a method of sorting and recovering fine particles that are responsive to optical pressure, the method comprising emitting a laser beam (5) to a flow path (2) of a gas or liquid containing fine particles that are responsive to optical pressure and a component or components that are irresponsive to optical pressure, in such a manner that the laser beam crosses the flow direction of the gas or liquid (See at least Fig. 2), to selectively deflect the direction

of movement of only the fine particles that are responsive to optical pressure, in the direction of convergence of the laser beam, thereby sorting the fine particles from the component or components that are irresponsive to the optical pressure (See at least Col. 2 l. 30-63, Col. 4 l. 1-10). Additionally, Nishimura discloses wherein the fine particles are selected from the group consisting of organic or inorganic polymeric materials, metals, cells, microorganisms and biopolymers, of which are responsive to optical pressure (See at least Col. 2 l. 29-35) and further wherein the flow path is a flow path of liquid (See at least Col. 2 l. 36-38). Nishimura further discloses an apparatus for recovering fine particles comprising a laser beam emitter (48); a flow path (43) for flowing a gas or liquid containing fine particles (4) that responsive to optical pressure and a component or components that are irresponsive to optical pressure, the flow path (43) being disposed between the collector (42) and the laser beam (48) (See at least Fig. 5); the collector having at least one chamber disposed so that the opening faces the flow path (See at least Fig. 50; the laser beam emitter having at least one emitting aperture; and the apparatus being configured so as to emit a laser beam from the emitting aperture toward the opening of the chamber of the collector in such a manner that the laser beam crosses the flow path and converges behind the opening (See at least Col. 5 l. 55 – Col. 6 l. 15 & at least Fig. 5). It is broadly construed and generally understood that the fine particles are recovered in collectors (41,42) as it is disclosed they are separated from the stream of particles. Martin discloses a “Laser Particle Sorter”. See Figs. 1-2 and respective portions of the specification. Martin further discloses wherein a laser beam is used to move particles and wherein target particles

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are deflected and guided toward collection areas for recovering (See at least Col. 2 l. 54-59). Mitsuhiro discloses a process for "Separation of Fine Particles". See Fig. 1 and respective portions of the specification. Mitsuhiro further discloses the separation of fine particles wherein a laser beam (4) is used to radiate the fine particles (3) so that the particles are moved and further wherein target fine particles are irradiated with laser beam (7) and forced to flow toward a separation area to be recovered (See at least the Abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Nishimura to include the teachings of Martin and Mitsuhiro so that the fine particles were deflected and subsequently recovered in addition to having target fine particles irradiating with a laser beam so that multiple kinds of fine particles could be targeted for selection to be analyzed in a single step which would cut down on cost and save time by allowing multiple particles to be collected at the same time. Additionally, it would have been obvious to a person of ordinary skill in the art the time of the invention to modify the method of Nishimura wherein the collector could be positioned in different locations based so that it could be positioned in a location that made it easier for the recovery of fine particles with considering the position of the flow path and convergence point of the laser beam.

Claims 8-10, 13,16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (US-5495105) in view of Martin (US-4887721) and in further view of Mitsuhiro (JP-4370089).

Referring to claims 8-9,13,16. Nishimura discloses the invention as described above in detail. Nishimura further discloses an apparatus for recovering fine particles comprising a laser beam emitter (48); a flow path (43) for flowing a gas or liquid containing fine particles (4) that responsive to optical pressure and a component or components that are irresponsive to optical pressure, the flow path (43) being disposed between the collector (42) and the laser beam (48) (See at least Fig. 5); the collector having at least one chamber disposed so that the opening faces the flow path (See at least Fig. 50; the laser beam emitter having at least on emitting aperture; and the apparatus being configured so as to emit a laser beam from the emitting aperture toward the opening of the chamber of the collector in such a manner that the laser beam crosses the flow path and converges behind the opening (See at least Col. 5 l. 55 – Col. 6 l. 15 & at least Fig. 5). Nishimura does not disclose wherein the laser beam emitter has at least two emitting apertures, and wherein the collector has chambers corresponding in number to the emitting apertures. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Nishimura to include multiple emitting apertures and chambers which would correspond in number to the emitting apertures so that multiple target fine particles could be deflected and separated into respective chambers which would help speed up the process and save money by allowing more than one type of fine particle to be separated at one time. Martin discloses a “Laser Particle Sorter”. See Figs. 1-2 and respective

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portions of the specification. Martin further discloses wherein a laser beam is used to move particles and wherein target particles are deflected and guided toward collection areas for recovering (See at least Col. 2 l. 54-59). Mitsuhiro discloses a process for "Separation of Fine Particles". See Fig. 1 and respective portions of the specification. Mitsuhiro further discloses the separation of fine particles wherein a laser beam (4) is used to radiate the fine particles (3) so that the particles are moved and further wherein target fine particles are irradiated with laser beam (7) and forced to flow toward a separation area to be recovered (See at least the Abstract). It should further be noted that Nishimura discloses a collector (42) which is located outside of the flow path (44) (See at least Figs. 5). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Nishimura to include the teachings of Martin and Mitsuhiro so that the fine particles were deflected and subsequently recovered in addition to having target fine particles irradiating with a laser beam so that multiple kinds of fine particles could be targeted for selection to be analyzed in a single step which would cut down on cost and save time by allowing multiple particles to be collected at the same time. Additionally, it would have been obvious to a person of ordinary skill in the art the time of the invention to modify the method of Nishimura wherein the collector could be positioned in different locations based so that it could be positioned in a location that made it easier for the recovery of fine particles with considering the position of the flow path and convergence point of the laser beam.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (US-5495105) in view of Martin (US-4887721) in further view of Mitsuhiro (JP-4370089).

Referring to claims 11-12. Nishimura discloses the invention as described above in detail. Nishimura does not disclose wherein the detection and analysis portions are linked to the laser beam emitter, so that fine particles and targeted fine particles in the gas and liquid stream passing through the flow path are selected based on data obtained in the detection and analysis portions and so that only the selected target fine particles are irradiated with the laser beam. Mitsuhiro discloses the invention as discussed above in detail. Mitsuhiro further discloses the separation of fine particles wherein a laser beam (4) is used to radiate the fine particles (3) so that the particles are moved and further wherein target fine particles are irradiated with laser beam (7) and forced to flow toward a separation area to be recovered (See at least the Abstract). Additionally, Mitsuhiro discloses detection and analysis portions linked to the laser beam emitter (4) and wherein and analysis takes place wherein only the desired target particles are irradiated with the laser beam (7) (See at least Abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the apparatus of Nishimura to include the teachings of Mitsuhiro in which a detection and analysis portion was linked to the laser beam emitter so that only the targeted fine particles were irradiated so that it was easier to separated and sort multiple types of fine particles from one another which would make the process more efficient by saving time and money by separating multiple fine particles in streams in one step.



### ***Response to Arguments***

Applicant's arguments filed 5/3/2007 have been fully considered but they are not persuasive. In particular, Applicant's focus on an "adjusting the laser beam to converge inside a chamber of a collector facing the laser beam emitting aperture located outside the flow path" is disclosed by Mitsuhiro. It should be noted and broadly construed that Mitsuhiro discloses a focused laser beam (7) converging inside a chamber (A) of a collector facing a laser beam emitting aperture (3b) with the flow path interposing there between (See at least Fig. 1). It should be noted as it has been disclosed in the prior art rejections that collector chambers (41,42) of Nishimura are located outside the flow path (See at least Fig. 5)

### ***Conclusion***

Examiner has maintained the prior art rejections, statutory rejections and drawing objections as previously stated and as modified above. Applicants' amendment necessitated any new grounds of rejection present in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell H. Matthews whose telephone number is (571) 272-5929. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathy Matecki can be reached on (571) 272-6951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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THM

A handwritten signature in black ink, appearing to be 'P. Mackey', written over a horizontal line.

PATRICK MACKEY  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600